

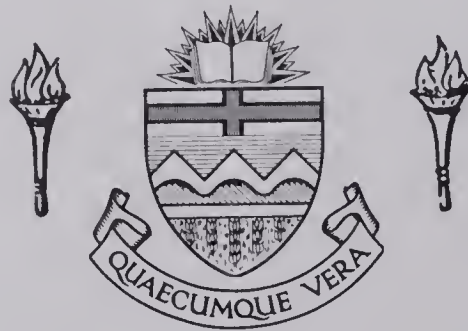
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THE UNIVERSITY OF ALBERTA

THE INTELLECTUALISM-PRAGMATISM SCALE
APPLIED TO UNIVERSITY OF ALBERTA STUDENTS
IN VOCATIONAL EDUCATION

by



GEORGE RAYMOND ROSE

A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled, "The Intellectualism-Pragmatism Scale Applied to University of Alberta Students in Vocational Education," submitted by George Raymond Rose in partial fulfillment of the requirements for the degree of Master of Education.

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ABSTRACT

In 1960, H. E. Yuker and J. R. Block constructed an "Intellectualism-Pragmatism Scale" (I-P Scale) to provide an empirical measure of intellectual attitudes. In this study, the I-P Scale was incorporated into a questionnaire that was administered to 268 student teachers and teachers of vocational education in the Province of Alberta. The purpose of this questionnaire was to investigate whether personnel (male and female, technical and non-technical) recruited from industry to become vocational education teachers were more pragmatic in outlook than vocational education teaching personnel with one or more years of teacher education completed. The study also investigated the possibility that the selection of predominantly arts or predominantly science options by these students and teachers could show a significant trend toward a more intellectual attitude following teacher education as measured by the I-P Scale. This study further investigated whether the degree of religiosity held by vocational education students and teachers was indicative of intellectual or pragmatic attitudes at the personality level. Five hypotheses were tested.

The statistical procedure adopted to compare the differences between means of the student teacher groups was Fisher's t-test. The analysis of variance was adopted to compare the means of the selected groups as they progressed through the completed years of teacher training categories.

The findings of this study indicated that the sample of vocational education students who had recently left industry, and who had just begun teacher training, appeared to have a relatively high degree of pragmatism as measured by the Intellectualism-Pragmatism Scale.

When the total student sample was divided into certain selected pairs of groups--non-technical and technical, arts options and science options, male and female, and groups who professed three degrees of religiosity--this study did not find a significant difference in the mean intellectualism scores between the first three group pairs. When the mean intellectualism scores of the groups who professed three degrees of religiosity were tested for differences between every possible combination of means, the group of students that professed not to believe in the existence of a Heaven and a Hell had a significantly higher mean intellectualism score on the I-P Scale than the groups that professed uncertainty as to the existence of a Heaven or Hell or a belief as to the existence of a Heaven and Hell.

This study also found that the "liberalizing" portion of the vocational education teacher training program at the University of Alberta did not, to any significant degree, increase intellectualism scores on the I-P Scale for the students and teachers enrolled in this program at the time of the study.

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CHAPTER I

THE PROBLEM

I. INTRODUCTION

From the dawn of recorded history, there has been considerable evidence of the intellectuals' age-long hostility to the utilitarian point of view, and this antagonism has continued to reveal itself through the ages.

In ancient Greece, thought always went back to theory. Durant (1939, p. 628) wrote that Archimedes constructed strange mechanisms to study the principles on which they operated. But his perennial interest and delight lay in pure science which he conceived of as a key to the understanding of the universe rather than as a tool for practical construction. This attitude of Archimedes was also noted by Hoffer (1952, p. 66), "Archimedes considered the work of an engineer as ignoble and vulgar, and looked upon his own ingenious mechanical inventions as playthings." But for the abundance and cheapness of slaves, Archimedes might have been the head of a veritable Industrial Revolution. But the philosophical tradition of antiquity unconsciously decided it was not worthwhile to be modern; and thus, for many ages, Archimedes prescribed for the theorist the role of being a man who loses his life in the cobwebs of speculation (Durant, 1939, p. 644).

By the nineteenth century the industrial revolution was in full swing, spurred on by the driving force of science. The successes of modern science that laid the foundation for present-day technology were, for the most part, pragmatic. Like nothing else in history, science worked. In a world that wanted to build bridges and win wars, engineers and scientists were convincing.

Thus the culture of the nineteenth century saw a double development: the all-but-universal desire for results strengthened science and technology while the strengthened science and technology seemed to weaken the devotion to the spiritual. The world of behavior flourished at the expense of the world of the spirit. Thus flowered the primacy of the sense world. (Russell, 1965, p. 46).

Philosophically, the age of pragmatism had arrived.

James (1907, p. 53) said of pragmatism:

It agrees with nominalism for instance in always appealing to particulars; with utilitarianism in emphasizing practical aspects; with positivism in its disdain for verbal solutions, useless questions and metaphysical abstractions. All these, you see, are "anti-intellectualist" tendencies.

J. A. C. Brown (Ziel, 1965, p. 6) recorded the current status of the intellectualism-pragmatism argument by writing:

Scientists are regarded with suspicion. They are called such names as "egg-heads," which is one aspect of America's profound anti-intellectualism . . . America needs a greater respect for the pure scientist and the intellectual.

By mid-twentieth century, the "real" world became the world of abstraction. The concepts of the Einsteinian universe and the probabilistic universe left the scientist as much convinced as his scholastic and/or religious counter-

part, or perhaps even more convinced, of the existence of worlds which cannot be reached through the human senses (Russell, 1965, p. 46).

An educator, H. R. Ziel, suggests that:

Rather than a dichotomous acceptance of a synthesis of theories developed by philosophy or the techniques and applications provided by science, there has been a reluctance to accept direction outlined by philosophy reinforced by the facts of science. (Ziel, viii/Preface).

He further pointed out that, in today's world, there were large numbers of occupations in business and industry that required some specialized training within the context of adequate academic education.

Towards this end, the Department of Industrial and Vocational Education of the University of Alberta established, in 1962, a teacher-training program for the purpose of educating personnel of proven competency in industry, both non-technical and technical, male and female, to become vocational education teachers in the secondary schools of Alberta. Thus, vocational teachers would have technical competence reinforced by academic disciplines. The justification for this kind of vocational education teacher training was the need to provide a teacher adequately prepared to educate youth for vocations--youth who had to be taught to recognize and anticipate the occupational changes which accompany technological changes.

CIRF Monographs (1964, p. 1) suggests that, " . . . Knowledge and understanding of the processes involved in a

job or occupation have become as important as competence in the manipulative skills." This need for greater intellectualism in an occupation was further amplified:

. . . if vocational training and education, which are catering for more than one-half of all young persons in industrially-advanced countries, are to acquire the desirable intellectual standard and social status, then vocational teacher training will have to be developed to ensure that the teachers themselves get the appropriate experience and competence. (CIRF Monographs, 1964, p. 11).

The greater need was, therefore, not to learn how to do things, how to perform, or how to act. It was rather to learn how to think, how to judge, how to balance, how to perceive. Action had to be relegated to what it used to be: a subordinate of thought. "Behavior based on thought and responsive to thought can be good. Behavior without thought is idiocy." (Russell, 1965, p. 47).

It was felt by philosophers, governmental authorities, and educators that university teacher preparation which included liberalizing courses would intellectualize pragmatically-oriented industrial personnel. This intellectualization process would better fit vocational education teachers to help students to adapt to occupations, some of which did not yet exist.

II. STATEMENT OF THE PROBLEM

This study administered the Intellectualism-Pragmatism

Scale¹ to determine the extent to which vocational education teachers could be liberalized by exposure to the university.

The I-P Scale was originally developed by H. E. Yuker and J. R. Block in 1960 to provide an empirical measure of the Intellectualism-Pragmatism Dichotomy. This study proposed to use this Scale to:

(1) define the position on the I-P continuum of a sample of vocational education students who had recently left industry and who had just begun teacher training;

(2) define the position on the I-P continuum of certain selected groups of vocational education students--non-technical, technical, arts options, science options, female and male, and groups with three professed degrees of religiosity--in relation to the theoretical position of the total vocational education student sample;

(3) compare the differences in means between pairs of selected student groups; and

(4) determine the direction or intensity of intellectualism as measured by the I-P Scale by comparing selected groups in the completed years-of-vocational education categories with the same previously-selected groups in the student teacher category.

¹For the purposes of this study, the researcher will use the abbreviated form I-P Scale when he refers to the Intellectualism-Pragmatism Scale.

Specifically, the problem was stated: were personnel recruited from industry to become vocational education teachers more pragmatic in outlook than those vocational education teachers who had completed one or more years of teacher training? In short, because it related logically to the aim of the program, was there any trend toward a more intellectual attitude following teacher training as measured by the I-P Scale?

It was hoped that this study would be able to provide some insight as to the contribution of the "liberalizing" portion of the vocational-education program to the total vocational education program.

III. SIGNIFICANCE OF THE PROBLEM

For many years in America, vocational education has been accepted as an integral part of public education. Just as industry has grown and changed, so vocational education has grown and changed. Traditionally, vocational education followed the industrial needs when the changes were slow. Today, it is not possible for vocational education to follow rapidly enough the changes in industry.

Society now asks that vocational education prepare pupils to live and work in a technological culture that is fraught with change. The qualities required of vocational education teachers have changed accordingly. The habitual or pragmatic skill approach to the teaching of vocational

education with its limited or fixed results needs to be superseded by an intellectual anticipatory approach capable of producing a variety of results in order to prepare pupils for changing occupational requirements.

From his observation of the working world, Drucker (Halsey, 1961, p. 15) pointed this out.

We are undergoing the educational revolution because the work of knowledge is no longer unproductive in terms of goods and services. In the new organization it becomes the specifically productive work. The man who works exclusively or primarily with his hands is the one who is becoming increasingly unproductive. Productive work in today's society and economy is work that applies vision, knowledge and concepts--work that is based on the mind rather than on the hand.

The vocational education teacher, while he has attained his skill or "specialty" in the working world, requires, in addition to skill and teacher training, liberalizing courses to give him added intellectual breadth. Indeed, this theme is elaborated by Broudy (Ziel, 1965, p. 200).

Workers in the field who think of themselves solely as technicians perhaps can dispense with such studies. Given familiarity with the processes to be taught and some teaching skill, they can do their job without losing sleep over the vagaries of the culture. They are in a sense not very different from the boys and girls they are teaching, for it is a case of an experienced technician teaching a novice technician . . . it will take more and more knowledge of the world to understand the world of work, and it will take even more if educators aspire to anything more than catching up with the dynamics of economical change. We are, all of us, therefore, condemned to develop our powers of knowledge and wisdom to a degree hereto believed impossible for the common man.

It is for this reason that at the professional level vocational educators need foundational study in the philosophical, psychological, historical and

sociological materials that bear on problems of educational policy, curriculum design, organization and support, and teacher-learning, as well as technical training.

Barlow (1965, p. 170) emphasizes the significance of the academic needs for vocational education teachers in the following statement.

It is imperative that he who would prepare students for successful vocational careers must first of all know, from experience, the skills and activities required for success in the occupation and must have been successful in it, however it has become apparent over the years that each individual's educational development must include general and liberal education. The preparation of the vocational education teacher should, therefore, include some appropriate liberal-arts education.

With the expanding industrialization in Canada, the governments, both federal and provincial, have recognized the necessity of preparing greater numbers of vocational teachers having a liberal education to develop Canada's manpower. The statements of the above authorities in the educational field are reinforced by the Report of the Select Committee on Manpower Training in the Province of Ontario (1963, p. 88).

. . . good vocational instructors must not only be able to teach the theory behind their subjects but must also be able to teach their practical application. In some fields this could readily lead to more taxing demands than those now served upon academic instructors. In some instances it will no doubt mean that vocational teachers will have to embody a far more judicious combination of practical experience and theoretical knowledge than has ever been required of any other type of teacher.

The trend of thought by industry and, in turn, reflected by educators, is that skill alone in particular vocational

areas cannot properly equip a pupil for entry into the labour market. Industry asks that vocational education programs provide the pupils with a framework of ideas and attitudes into which all further work experiences can be fitted. To prepare pupils in a broadened intellectual manner--not in skills alone--the vocational education teacher himself must have a broadened intellectual base. In short, the traditionally pragmatic approach no longer suffices.

In the past, vocational education teachers were drawn from industry, but they lacked the pedagogical preparation of the professional teacher. This type of teacher taught in a way that was comfortable to himself by treating the laboratory as a miniature industrial shop. In most cases, students were shown the "how", and seldom taught the "why". The alternative approach open to educators was to employ teachers with a pedagogical background to attempt to teach the principles of a trade. All too often this academic approach, while comfortable to the teacher, was not able to provide a practical reality for the student.

One of Alberta's educators, Dr. H. R. Ziel, has chosen to view the philosophy of today's vocational education as one of "synthesis." By synthesis, he indicated in an interview, that vocational educators must bring into focus academic proficiency as a base or foundation from which a vocationally competent teacher can expand his intellectual horizons.

Teachers involved in the vocational education program in Alberta have a unique preparation in that a background of first-hand knowledge and participation in industry is a prerequisite for the teaching of their skill. This program draws vocational education teacher candidates, both male and female, from industry and qualifies these personnel as professional teachers. These prospective teachers have followed many and different preparatory routes in that they have had a diversity of work experiences in technical and non-technical areas and have come from a variety of socio-economic environments. They have formed certain personality patterns--degrees of authoritarianism, traditional attitudes, and religious beliefs--that colour their perceptions of their world. A commonality in education is a high school senior matriculation level. In addition, some of these prospective teachers hold degrees other than the Bachelor of Education degree; and some have completed courses in arts and science at the university level.

Dr. Ziel's program includes a proven prerequisite for entry to his program (senior matriculation and trade qualification), basic teacher training courses, and options in the arts and sciences. Through the implementation of this program, it has been possible to provide a pool of professionally educated vocational teachers who are more able to work comfortably within the parameters necessary for teaching vocational education in today's productive society.

As has been noted in the Introduction to this Chapter, both the Intellectuals and the Pragmatists have thought, at one time or another in the past, that they alone possessed a philosophy that would provide the basis for educating individuals to live in the "real" world. History has proven the inadequacy of both of these points of view and has shown that intellectualism and pragmatism are but extremes along a continuum. To prepare pupils to live and work in today's technological culture, it has been suggested that university preparation of vocational education teachers can provide a more liberal outlook toward the world of work. In other words, this type of preparation will shift the attitudes of these teachers to a new position toward the intellectual end of the I-P Continuum. It appears that research would be of value to vocational teacher training institutions in determining the ability of university courses to liberalize vocational education teachers theorized to have come from pragmatic environments.

V. STATEMENT OF HYPOTHESES

The following hypotheses were tested in this study:

1. Students from non-technical trade specialties will score higher on the I-P Scale than will those students from the technical trade specialties at the beginning of the vocational education program.

2. Students choosing predominantly from the Arts options will score higher on the I-P Scale than will those students choosing predominantly from the Science options at the beginning of the vocational education program.
3. Female students will score higher on the I-P Scale than will male students at the beginning of the vocational education program.
4. Students with a slight degree of religiosity will score higher on the I-P Scale than will those students with a greater degree of religiosity at the beginning of the vocational education program.
5. Teachers in the third and fourth year of the vocational education program, as well as teachers who have completed the vocational education program, will score higher on the I-P Scale than will those students just beginning the vocational education program.

VI. DEFINITION OF TERMS

Intellectualism

This term was defined as that which pertains to ideas and things of the mind--a person interested in ideas, in contrast with the person who was purely practical. Intellectualism exhibited a general theme of openness--of never

accepting things as they appeared. Implied in this was long-range thinking, of not seeing things in terms of black and white, and always exhibiting a constant element of doubt. They were individuals who "live for ideas rather than off them."

Pragmatism

This was defined as the doctrine that ideas have value only in terms of their practical consequences and that results are the sole test of the validity or truth of one's beliefs. One who exhibited pragmatism was an individual immersed in routine, who tended to lack flexibility of mind when he approached the periphery of his specific field. Implied within pragmatism was a sense of immediacy to see results. He operated with a closed mind--he perceived his results by making them the centre of relevance to which all other results had to be related.

Liberalism and Conservatism

Yuker and Block found significant correlations between intellectualism and liberal attitudes in politics, patriotism, education and religion (1964, p. 5). For the purposes of this study, these terms were used synonymously with "intellectualism" and "pragmatism" respectively.

Authoritarianism and Non-authoritarianism

As the Intellectualism-Pragmatism Scale has been highly correlated with authoritarian scales, this term

appeared in this study. It indicated a personality construct that operated as a closed mind to ideas per se and looked upon new ideas as threatening.

The authoritarian was described as rigid, extroceptive, repressed, conforming, and intolerant of ambiguity. The authoritarian was essentially anti-intellectual.

The non-authoritarian was more highly individualized and his evaluations were more objective. Therefore, he was better equipped to use subtle personality cues and make more personalized, insightful assessments of the attitudes and values of others. He was a more liberal person.

CHAPTER II

REVIEW OF RELATED LITERATURE

The purpose of this study was to determine the extent to which craftsmen who became vocational education teachers could be liberalized by exposure to the university curriculum and environment. This study presented a unique problem to the researcher in that the subjects involved in this study were combining two separate careers, industrial and teaching. Both the experiences gained in the industrial environment and the experiences gained in a university environment could presumably influence the manner in which the subjects were able to give a student a more knowledgeable outlook toward the world of work.

A search of related literature did not reveal any studies made specifically on industrial workers who entered the university to qualify as "teachers" in the full sense of the word, and not solely as teachers of a vocational speciality. However, there had been studies done on the industrial worker in respect to intellectual and pragmatic attitudes. There were also studies available regarding change in intellectualism of students in general as a result of university education. Insights could be gained from a review of the literature that was available in both of these areas.

The Industrial Worker

Lipset (1963, Ch. 4) noted that many studies had suggested that the lower-class produced individuals with rigid and intolerant approaches to politics. Workers from the lower-class were more liberal on economic issues (i.e. higher wages, graduated income tax, support of trade unions), but when liberalism was defined in noneconomic terms (i.e. support of civil liberties, internationalism), the correlation was reversed. The more well-to-do were more liberal; the poorer were more intolerant. The middle class followed the fashionable concept of liberalism but this was discarded as quickly as by the worker when anything was called for other than an abstract allegiance to a slogan that did not interfere with everyday life.

Miller (1961, pp. 86-97) concluded that workers appeared to be more authoritarian on the F-scale than they probably were because, while they appeared to be "conventional", - a characteristic of the authoritarian according to Adorno et al., - they had a traditional attitude toward discipline which might be confused with authoritarianism. Many of the attitudes that they held were related to their traditional orientation, and they were held unquestioningly in the usual traditional manner. They were not readily open to reason and were not flexible in their opinions. Workers showed a tendency toward definite convictions and were highly stubborn in the spheres of morality, custom, tradi-

tional education, the role of woman, and intellectualism.

Kohn (1959, pp. 364-365) suggested that the industrial worker had a high degree of pragmatism and anti-intellectualism. Workers were more interested in the end-result of action than in the planning of action, or in the preoccupation with the means of action. Action that went astray could not be tolerated because it had to achieve the intended goal to be satisfactory.

Miller (1961, pp. 86-97) concluded that, while workers felt that it was results that paid off, this orientation had an anti-intellectual dimension. Workers liked the specific, clear action and understood results. That which was seen and felt was more real; therefore, his perspective was likely to be limited. "The pragmatic orientation of workers does not encourage them to see abstract ideas as useful." Education was seen in terms of opportunity, and the abstract intellectual speculations which were not rooted in the realities of the present were not thought to be useful. They had an "anti-words" orientation. "If promised 'pie in the sky,' there must be a very concrete specific set of ingredients with a clear distribution of the pie."

Workers often had an exaggerated respect for the ability of the learned. A person with intellectual competence in one field was frequently thought to be a "brain" with ability in all fields. Miller felt that this was partly due to the general abstract nature of ideas regardless

of field. Moreover, when the workers approached a real problem or obstacle, they expected "the brain" to have a ready solution, even if they were not willing to adopt it.

Education

Lehman (1963, pp. 305-315) tested 1,051 students for changes in critical thinking, attitudes, and values from the freshman to the senior years. He found that both males and females became less stereotyped in their beliefs from their freshman to senior years. These students became more flexible, less rigid, and less authoritarian during their four years at college.

Both males and females became more open-minded and receptive to new ideas during their college years. The students became less inner-directed and more outer-directed. He also found that students became less traditional-value oriented. They tended to be less absolute in their moral, religious, and ethical beliefs. They became more questioning, but more prone to conforming to the new, more liberal, peer norms. For this study, Lehman used the Inventory of Beliefs Value Test, the Test of Critical Thinking, The Differential Values Inventory, and The Dogmatism Scale.

Pricert (1964, pp. 112-121) completed a study in California indicating the amount of time spent in university and the types of courses taken affected scores on the F-Scale. He found that physics majors had a rigid and authoritarian outlook compared to sociology students, who

indicated open-mindedness towards variant beliefs and democratic procedures. He found that students, majoring within the same subject, tended to express beliefs which were characteristic of the group. Caution was advised in the interpretation of these results. There was no evidence that the more pragmatic minds were oriented to the sciences; thus, a first cause could not be established.

Plant (1958, pp. 189-197) compared an off-campus group of university students for a two-year period. He found that the university group changed significantly in ethnocentrism, but that there was no change for the off-campus group.

Webster (1958, pp. 109-117) found more tolerance for unconforming ideas and behavior among university graduates than for off-campus groups.

Webster, Freedman and Heist (1962, pp. 811-846) reviewed studies that investigated change in attitude as a function of college experience. Their conclusion was that most investigators reported a general increase in liberalism from the freshman to the senior year.

Bereiter and Freedman (1962, pp. 563-596) found that the most conservative groups at the university were in the applied, rather than the academic fields. It was suggested that differences in attitudes might be a function of the social class of individuals attracted to the various groups. "It seems quite reasonable to suppose that students who seek higher education mainly for some special vocational prepara-

tion should tend to resemble people in the work-a-day world more than do academicians."

Yuker and Block (1964, p. 11), on the basis of the I-P Scale, found that a ranking of Humanities, Social Science, Education, Natural Science, and Business, reflected the intellectual-pragmatic orientation of the respective fields.

Newcomb (Selltitz, 1965, p. 133) endeavored to find what kinds of people accepted social change. He hypothesized that values come to be values largely through the mediation of the groups with which the individual is in direct contact. The investigators reasoned that, if group membership was indeed the casual variable, then those who had been exposed to the group atmosphere for longer periods should show attitudes more in keeping with those characteristic of the group. Newcomb found this to be true with the group tested for changes in liberal attitudes. He indicated that there is the possibility that attending college might only have strengthened initial attitudes of the group, or that, on the other hand, it was the possession of these attitudes that had led the group to attending college. But, if this presumably had been the case, no such marked differences between longer-exposed students and shorter-exposed students could be expected to occur should college membership be the major causal factor.

Religion and Authoritarianism

Using the I-P Scale, Yuker and Block (1964, p. 1)

found that Catholic students scored lower than Jewish students, and students listing no religious affiliation scored higher than any religious group. They also found that when students were asked to give self ratings on religiosity, those who rated themselves below average in religiousness scored higher on the I-P Scale. Rokeach (1960, p. 447) found a similar correlation using a battery of exams on Catholic, Protestant, and students listing no-religions. These studies assumed that Catholicism was the most dogmatic religion.

Brown and Lowe (1951, pp. 103-129) measured the amount of change in religious attitude during university attendance among 106 students. Significant decreases were found for four of the seven indices used. They also found that students at a technical school also showed a decrease in religiosity. The findings were inconclusive as to whether it was the education or the socialization which was inherent in large institutions which caused the attitude change.

Jacob (1959, pp. 208-211) analyzed studies of student attitudes over the past fifteen years, and recent evaluations of the outcome of general education and other educational programs. He found that, while students expressed a need for religion, their attitude was to one of more tolerance.

Pilkington et al. (1965, pp. 150-157) measured

religiosity in first and third year students and found a considerable decrease in four of the seven indices used. He found in comparing university students to third year students in training college that university education was in itself unlikely to be important.

Some research has been done specifically on sex differences and liberalism. Crandall (1965, pp. 99-107) found that highly anxious men were more conservative than anxious females. In questions involving affective judgments, women were less conservative than men.

In Lehman's study (1963, pp. 305-315) females underwent more marked change than men in openmindedness and receptivity to new ideas. They also became more flexible and less authoritarian than did males. One shortcoming of all these studies was that the experimental group was always at college level. It was perhaps possible that only liberal females attended college; the more pragmatic tending to go into work immediately after high school.

Many large-scale studies have been completed testing the authoritarian mind hypothesis. Only the research which is specifically related to our hypotheses has been utilized.

Rokeach (1960, p. 447) has suggested that the closed mind should not be studied from the dichotomy of "left" and "right" authoritarians, but, rather, one has need to study the general properties held in common by all forms of authoritarianism. Rokeach said of the closed mind that:

To say that a person is dogmatic or that his belief system is more closed than the intellectual is to say something about the way he believes and the way he thinks--not only about single issues but also networks of issues. The closed mind . . . can be observed in the "practical" world of politics and religious beliefs, and in the more academic world of scientific, philosophic, and humanistic thought

. . . and, finally, we have come to conceive of man's cognitive activities--thinking, remembering, and perceiving--as processes and changes that take place within a person who has already formed a system of beliefs, which can be described and measured.

. . . If we know something about the way a person believes, is it possible to predict how he will go about solving problems that have nothing to do with his ideology? Is it possible to say that the extent to which a person's belief system is open or closed is a generalized state of mind which will reveal itself in his politics and religion, the way he goes about solving intellectual problems, (1960, pp. 5-14).

Gelbmann (1958, p. 79) summarized the concept of the closed mind by making it into a personality type: " . . . the concept of closed mind is not tied to any one particular belief system, it is construed to apply equally to all belief systems."

CHAPTER III

METHODOLOGY AND INSTRUMENTATION

I. INTRODUCTION

In 1960, H. E. Yuker and J. R. Block constructed an "Intellectualism-Pragmatism Scale" to provide an empirical measure of intellectual attitudes. In this study, the I-P Scale was incorporated into a questionnaire that was administered to 268 student teachers and teachers of vocational education in the Province of Alberta. The purpose of this questionnaire was to investigate whether personnel (male and female, technical and non-technical) recruited from industry to become vocational education teachers were more pragmatic in outlook than vocational education teaching personnel with one or more years of teacher education completed. The study also investigated the possibility that the selection of predominantly arts or predominantly science options by these students and teachers could show a significant trend toward a more intellectual attitude following teacher education, as measured by the I-P Scale. The study further investigated whether the degree of religiosity held by vocational education students and teachers was indicative of intellectual or pragmatic attitudes at the personality level.

II. DESCRIPTION OF SAMPLE

This study was specifically of vocational education students enrolled full-time at the University of Alberta at the time of this study and to practicing vocational education teachers who had started on the vocational education degree program in 1962 or later.

In Table I below, responses from the students and teachers that comprised the sample were summarized.

TABLE I

SUMMARY OF RESPONSES FROM VOCATIONAL EDUCATION STUDENTS AND TEACHERS IN THE SAMPLE

Number of actual questionnaires completed	268
Number of questionnaires not returned	120
Number of questionnaires deleted	8*
TOTAL	396

*--See Page 27

The actual sample for this study included 109 vocational education students currently enrolled at the University of Alberta; forty-eight teachers who had completed their second year of vocational teacher education; fifty-nine teachers who had completed their third year of vocational teacher education; thirty-seven teachers who had completed their fourth year vocational teacher education; and fifteen who held a previous university degree and had completed one

year of vocational teacher education. The actual sample for this study, therefore, was composed of 268 subjects.

The selection of the 1966-67 vocational education class for testing was made in order to achieve some perspective as to the characteristics of persons recently out of industry; and, secondly, to use the measurements of this class as a baseline in determining if there was a trend in attitudes toward the intellectual end of the continuum of the I-P Scale.

Permission to test vocational education students, enrolled at the University of Alberta, was obtained from Dr. H. R. Ziel, Head of the Department of Industrial and Vocational Education.

Permission to test vocational education teachers in the City of Edmonton was obtained from the Edmonton Separate School Board and the Edmonton Public School Board. Although initially requesting that the item pertaining to religious beliefs be deleted, the Edmonton Public School Board, on being asked to reconsider the item, gave permission for its inclusion in the questionnaire.

All material required for this study was sent to the home address of the teacher concerned.

It was considered essential to assure each student and teacher that the information given by him would remain completely anonymous. In order to have teachers feel more confident, a covering letter requested that no teacher or

student write his name on the questionnaire.

In three instances, teachers declined to follow instructions, in order to amplify their opinions. Four questionnaires were not completed; and, in one case, the teacher declined to answer because he considered that the questionnaire required information that was much too personal. These questionnaires were all discarded.

Of a total enrollment of 126 vocational education students, 111 questionnaires were collected (88 percent). Of the 270 questionnaires sent to teachers in the province, 165 completed questionnaires were returned (61 percent). The group that did not return questionnaires could not be described by any particular characteristics.

III. INSTRUMENTATION

To obtain an intellectualism-pragmatism rating, the Intellectualism-Pragmatism Questionnaire, developed by H. E. Yuker and J. R. Block of Hofstra University, was administered to vocational education student teachers enrolled at the University of Alberta. It was also administered to vocational education teachers in the Province of Alberta, who were in the process of, or had completed, teacher training.

The I-P Questionnaire was originally developed to measure intellectual attitudes on a continuum in an effort to operationally define intellectual attitudes, and to

determine, empirically, some of the correlates of intellectualism. Thus, the original instrument was referred to as The Attitude Toward Intellectualism Scale. H. E. Yuker and J. R. Block renamed it the Intellectualism-Pragmatism Scale (I-P Scale) because, in their opinion, the use of an intellectualism-pragmatism dichotomy was not only reasonable in terms of item content, but also seemed consistent with the definitions of intellectualism and pragmatism. Furthermore, they contended that a low score reflected "non-" or "anti-intellectual" attitudes.

The questionnaire used was a 30-item, Likert-type attitude scale which had been administered to over 3,500 American college students. From the results, Yuker and Block (1964, p. 1) concluded:

Reliability

Reliability coefficients, as estimated through the split-half technique corrected using the Spearman-Brown Formula (Guilford, 1954) with different sample of under-graduate college students, tend consistently toward the mid-eighties with a median of approximately 0.84.

Thus far, the only evidence of test-retest reliability is available for a group of thirty undergraduates enrolled in a course in introductory psychology at Hofstra University. The interval between test administrations was approximately four months and the correlation coefficient obtained was 0.837.

Validity

The method of construct validity was used in evaluating the adequacy of the I-P Scale. While

this method has been recently criticized (e.g., see Bechtoldt, 1959, and Ebel, 1961), it is still acceptable to most researchers, particularly since there is no adequate alternative available. Underwood (1957) has stated that any test which has adequate reliability may be considered as an operational definition of the trait it purports to measure. Accordingly, we consider the I-P Scale to represent an operational definition of an intellectualism-pragmatism continuum. From this point of view, correlates of the test should provide evidence as to the extent to which the operational definition is related to more literary definitions. Judgment as to the validity, meaningfulness or usefulness of the scale will be left to other investigators.

Yuker and Block stated that the I-P Scale had been highly correlated to Kerlinger's scale of progressive attitudes to education, to five of the six measures of the Vernon Allport study of values; to the F-scale developed by Adorno; to Adorno's test on Political Attitudes and to Yuker's Attitudes to Disabled Persons Scale. (Yuker and Block, 1964, p. 13).

Students and teachers were instructed to rate their agreement or disagreement with each item on the I-P Scale and then score the item on a Likert scale, ranging from a plus three (maximum agreement) to a minus three (maximum disagreement).

Data on trade designation; major subject area chosen by the students and the teachers; sex; belief in, uncertainty in, or disbelief in the existence of a Heaven and a Hell; and years of university education were collected at the same time.

In scoring the test, the algebraic sign of the

subject's responses to fifteen items which were "negatively" worded to suggest a "pragmatic-conservative" attitude was changed. These included the items numbered 4, 5, 6, 8, 9, 10, 11, 12, 15, 19, 20, 21, 26, 27, and 30 (the starred items on the sample questionnaire in the Appendix, p. 72). The sum of all items was then obtained, which theoretically could range from minus 90 to plus 90. To eliminate negative numbers, a constant of 90 was added to all scores producing a new theoretical range of 0 to 180. Individuals receiving relatively high scores were classified as "intellectual-liberal" and those with relatively low scores were classified as "pragmatic-conservative."

Following division of the raw scores into their respective years of completed teacher education categories, an analysis of variance was used on selected groups within the categories to test the significance of the difference between the means of these groups in the various categories. The testing of all possible combinations of means was accomplished by using t-test ratios and Newman-Keuls comparison between ordered means (Winer, 1962, pp. 86, 101).

Facilities were provided by the Faculty of Education and the Department of Computing Science, University of Alberta.

CHAPTER IV

PRESENTATION OF FINDINGS

I. INTRODUCTION

The major purpose of this study was to investigate whether personnel recruited from industry to become vocational education teachers were more pragmatic in outlook than those vocational education teachers who had completed one or more years of teacher training. In Chapter I, hypotheses were developed from an analysis of the problem. Hypotheses I, II, III, and IV were concerned with the establishment of the relationship between various selected groups of beginning vocational education teachers. Hypothesis V sought to establish whether there would be a trend towards an intellectual outlook following the initial year of teacher-training.

In Chapter III of this study, reference was made to the Intellectualism-Pragmatism Questionnaire and its purpose in this study. Students and teachers were asked to rate their amount of agreement or disagreement with each item on the scale and then score the item on a Likert-type scale, ranging from a plus three (maximum agreement) to a minus three (maximum disagreement). The statistical procedures adopted to compare various student and teacher groups were also outlined.

In the present Chapter, the hypotheses are restated,

the methods of testing described, and the results provided. The critical level of significance for all calculations in this study was set a priori at 0.05.

The mean scores obtained for each group in the sample on the I-P Scale were indicated in Table II, below.

The statistical procedure adopted to test the first four hypotheses was Fisher's t-test, which was applied to the comparison of the difference between means of the groups that comprised Hypotheses I, II, III, and IV.

The statistical procedure adopted to test Hypothesis V was an analysis of variance, which was applied to the selected groups within the categories, to compare the differences between the means of these groups. Testing the differences between all possible combinations of means was accomplished by applying the Newman-Keuls comparison of ordered means test (See Appendix, pp. 75-83).

TABLE II

MEAN SCORES OBTAINED FOR EACH GROUP IN THE SAMPLE
ON THE INTELLECTUALISM-PRAGMATISM SCALE

Groups	Students	Completed 2nd Year	Completed 3rd Year	Completed 4th Year	Previous Degree
Non-Technical Technical	109.843 109.914	114.389 108.167	112.857 111.044	114.909 114.885	124.143 119.000
Arts Options Science Options	111.532 107.694	116.308 103.636	113.235 109.080	118.048 110.750	121.250 121.571
Female Male	107.192 110.024	110.583 110.472	114.714 110.038	123.600 114.727	119.143
Group A* Group B* Group C*	107.655 106.667 116.458	109.417 115.071 106.700	108.091 111.000 116.111	112.350 111.400 127.143	126.400 110.167 132.000

* -- Group A - I believe there is a Heaven and a Hell.

Group B - I believe there might be a Heaven and a Hell.

Group C - I do not believe there is a Heaven and a Hell.

II. TESTING INTELLECTUALISM-PRAGMATISM SCORES

Testing of Hypothesis I

This hypothesis stated:

Students from non-technical trade specialties will score higher on the I-P Scale than will those students from the technical trade specialties at the beginning of the vocational education program.

The total student sample mean was 109.349. The non-technical mean was 109.843, and the technical mean was 108.914. The standard deviations were 15.98, 15.92, and 16.17 respectively. While the test scores relating to this hypothesis would appear to be operating in the proper direction, the difference between these two means was not found to be significant. Both groups in the sample were considered to be from the same population (Table III, p. 39).

This hypothesis investigated whether all vocational education teachers, because of a traditional orientation to industry (Miller, 1961, pp. 86-97), would achieve comparable scores on the I-P Scale. It was reasoned that there might be differences between the I-P Scores of vocational education teachers who had been oriented in non-technical vocations (white-collar workers), and vocational education teachers who had been oriented to the technical vocations (blue-collar workers). The results of the testing of this hypothesis seemed to indicate that the traditional attitudes held by vocational education teachers with industrial orientations were, in general, much the same.

Testing of Hypothesis II

This hypothesis stated:

Students choosing predominantly from the Arts options will score higher on the I-P Scale than will those students choosing predominantly from the Science options at the beginning of the vocational education program.

In relation to the total student sample mean of 109.349, the mean of the arts group was 111.532, and the mean of the science group was 107.694. The standard deviation for each group was 15.98, 17.79, and 14.38 respectively. While appearing to be operating in the right direction, the difference between group means was not found to be significant. Both groups represented the same population (Table III, p. 39).

It was the policy of the Department of Industrial and Vocational Education at the University of Alberta that one of the two sequences of arts and science options open to vocational education students be related to their teaching specialty. This sequence for the technical specialties could include mathematics, physics, or chemistry. For the non-technical specialties these options could include English, sociology, or economics. A selection factor was operating in that, in general, the non-technical students received a greater number of liberal arts courses than did the students with technical specialties. This selection factor did not appear to affect student scores on the I-P Scale.

Testing of Hypothesis III

This hypothesis stated:

Female students will score higher on the I-P Scale than will male students at the beginning of the vocational education program.

Compared with the total student sample mean of 109.349, males had a mean of 110.024, and females had a mean of 107.192. The standard deviation for each group was 15.98, 16.10, and 15.70 respectively. While the difference between their means was not found to be significant, it was noted that the test scores did not appear to be operating in the direction predicted by the hypothesis. As has been previously mentioned in Chapter II, higher pragmatism scores, if exhibited by female students, could be attributed to a selection factor operating on female high school students. There was the possibility that only those "intellectually" inclined would tend to enter the university upon graduation, while the others would enter technical schools, business colleges, or would go directly into work. This selection factor appeared to be operating.

Both males and females were considered to come from the same population (Table III, p. 39).

Testing of Hypothesis IV

This hypothesis stated:

Students with a slight degree of religiosity will score higher on the I-P Scale than will those students with a greater degree of religiosity at the beginning of the vocational education program.

In order to test this hypothesis, three F-tests were computed in order to compare the differences of all possible combinations of means of three groups. The groups were labeled:

Group A - I believe there is a Heaven and a Hell;

Group B - I believe there might be a Heaven and a Hell;

Group C - I do not believe there is a Heaven and a Hell.

F-tests were computed for the difference between means of groups A and B, C and B, A and C.

Group A had a mean of 107.655, Group B had a mean of 106.667, and Group C had a mean of 116.458, as compared with the total student sample mean of 109.349. The standard deviations were 15.54, 16.06, 15.53, and 15.98 respectively. The percentage of the total student sample in Groups A, B, and C was 53.2, 24.8, and 22.0 respectively.

The F-tests indicated a non-significant difference of means between Group A and B, but a significant difference between the means of Groups C and B, and Groups A and C.

While the difference between means of Group A and Group B did not reach the 0.05 significance level, it was operating in the direction opposite to that which was predicted by the hypothesis. In relation to the mean of the total sample, the means of both Group A and Group B were smaller. Group C showed a significant difference from the

means of both Group A and Group B (Table III, p. 39). This would seem to indicate that those students who responded to not believing in the existence of a Heaven or a Hell had a greater degree of intellectualism than those students who professed a belief in the existence of a Heaven and a Hell and those students who indicated a belief that there might be a Heaven or a Hell.

For the purposes of this study it was assumed that a belief in the existence of a Heaven and a Hell indicated strong religiosity, an uncertainty in their existence indicated a moderate degree of religiosity and, a disbelief in their existence indicated a slight degree of religiosity. There was no empirical evidence to validate that a subject's indication of a belief or uncertainty in the existence of a Heaven and a Hell had any relation to his actual relative degree of religiosity.

Of a total of 360 completed questionnaires, nine subjects qualified their belief in the existence of a Heaven and a Hell by stating that Heaven or Hell was a state of one's own making, but not necessarily a supernatural one.

Table III below indicated the t-test ratios for mean differences between student I-P Scores for Hypothesis I, II, and III; and the F-test ratios used in the testing of Hypothesis IV.

TABLE III

t-TEST RATIOS FOR MEAN DIFFERENCES
BETWEEN STUDENT GROUP I-P SCORES

	t
Non-Technical and Technical (Hypothesis I)	0.30
Arts and Science (Hypothesis II)	1.25
Male and Female (Hypothesis III)	0.79
Religion A and Religion B (Hypothesis IV)	0.27
Religion C and Religion B (Hypothesis IV)	2.20*
Religion A and Religion C (Hypothesis IV)	2.33*

* -- $p \leq 0.05$

Assuming the difference between group means was no greater than chance and that their means were thus not from two separate populations, the null hypothesis was upheld for all t-tests except those between Groups C and B, and Groups A and C. The null hypothesis as it applied to these groups was rejected as their means were significantly different at the 0.05 level. In fact, both of these t-tests showed that $0.01 \leq p \leq 0.05$. The t-test results therefore did not uphold the first four experimental hypotheses with the exception of parts of Hypothesis IV.

Testing of Hypothesis V

This hypothesis stated:

Teachers in the third and fourth year of the vocational education program, as well as teachers who have completed the vocational education program, will score higher on the I-P Scale than will those

students just beginning the vocational education program.

To test this hypothesis, the researcher retained the groups (non-technical, technical, Arts options, Science options, female, male, religious Group A, religious Group B, and religious Group C) that had been selected for the testing of Hypothesis I, II, III, and IV. The teacher questionnaires were divided into categories of years of teacher training. These categories were composed of teachers with two, three, and four years of teacher education. Another category composed of teachers with more than five years of teacher education was also included. The subjects in this category held a degree other than an education degree previous to becoming vocational education teachers and had completed one year of teacher training. There were, in all, a total of five categories.

A one-way analysis of variance, using the F-test, was applied to the means of the groups which comprised each category. In all, nine separate one-way analysis of variances were computed. To verify whether any difference between means was beyond chance, a Newman-Keuls comparison of all possible combinations of means was applied.

Analysis of Variance of Non-technical Categories

This analysis compared the means of the five category groups of vocational education students and teachers whose work experience was mainly in the non-technical field

(equivalent to "white-collar" workers). Table V in the Appendix (p. 75) showed the Analysis of Variance and the Newman-Keuls Test for the comparison of every possible combination of means.

The results ($F=1.08$; $4/96$; $p \geq 0.37$) as verified by the Newman-Keuls test, showed that no significant differences existed between any of the category group means. The non-technical vocational education teachers did not show a significant increase in intellectualism scores after taking university courses.

Analysis of Variance of the Technical Categories

This analysis compared the five years of teacher training category group means of the vocational education students and teachers whose work experience was mainly in the technical field (equivalent to "blue-collar" workers). Table VI in the Appendix (p. 76) showed the Analysis of Variance and the Newman-Keuls test for these groups.

The results of the analysis of variance ($F=1.29$; $4/162$; $p \geq 0.28$) and the Newman-Keuls test did not indicate an increase in intellectualism scores for vocational education teachers of technical subjects during their years of teacher education. The university courses did not appear to be "liberalizing" as measured by the I-P Scale.

Analysis of Variance of Arts Categories

This analysis compared the five category group means

of vocational education students and teachers who chose predominantly from the arts options during their years of teacher education. Table VII in the Appendix (p. 77) gave the computations for the Analysis of Variance and the Newman-Keuls comparison between ordered means for these groups.

Results of the analysis of variance ($F=0.95$; $4/131$; $p \geq 0.44$) did not indicate a significant increase in intellectualism scores and this was verified by the Newman-Keuls test. There did not appear to be a difference in intellectualism scores for those vocational education teachers who chose predominantly from the arts options during the teacher education period.

Analysis of Variance of the Science Categories

This analysis was the comparison of the means of the five category groups of vocational education students and teachers who chose predominantly from the science options. Table VIII in the Appendix (p. 78) showed the computations for this Analysis of Variance and the Newman-Keuls comparison between ordered means for these category groups. The results ($F=1.80$; $4/127$; $p \geq 0.13$) and the Newman-Keuls test did not show an increase in the intellectualism scores for increased years of teacher education up to and including four years. A significant difference was noted between the means of Group One (students) and the mean of Group Five (teachers possessing a degree other than a vocational education degree and one year of vocational teacher education).

This difference, while significant, could not be attributed to the normal pattern of vocational teacher education that the other groups followed, and therefore it was not considered. Thus, it appeared, in general, that intellectualism scores of the vocational education teachers who followed the normal vocational education pattern were not appreciably affected by exposure to science options.

Analysis of Variance of the Female Categories

This analysis compared means for the five category groups of female vocational education students and female teachers. Table IX in the Appendix (p. 79) gave the computations for the Analysis of Variance and the Newman-Keuls comparison between ordered means for these category groups.

The results ($F=1.32$; $3/46$; $p \geq 0.28$) did not indicate that exposure to university courses produced an increase in intellectualism scores for female vocational education teachers. This was verified by the Newman-Keuls test.

Analysis of Variance of the Male Categories

This analysis compared means for the five category groups of male vocational education students and male teachers. Table X in the Appendix (p. 80) showed the Analysis of Variance and the Newman-Keuls test for these groups.

While it appeared that the mean intellectualism scores increased with increased years of teacher education, the com-

puted results ($F=1.21$; $4/213$; $p \geq 0.31$) indicated no significant difference between the category group means. This was verified by the Newman-Keuls test.

Thus, it would appear, that exposure to university courses did not have any effect on the intellectualism scores of male vocational education teachers.

Analysis of Variance of Categories Believing in Heaven and Hell

This analysis was a comparison of the means of the five category groups of vocational education students and teachers who had expressed a belief in the existence of a Heaven and a Hell. Table XI in the Appendix (p. 81) showed the Analysis of Variance and the Newman-Keuls test for these groups.

Computed results ($F=1.68$; $4/124$; $p \geq 0.16$) and the Newman-Keuls test indicated that there was no significant change in intellectualism scores except in respect to a significant difference between the Groups in Category One, Two, Three, and Four with Group Five. As already explained, Group Five consisted of teachers with a previous university degree and one year of teacher education. In general, no significant increase in intellectualism scores was found for vocational education teachers who expressed a belief in the existence of Heaven and Hell after taking university courses.

Analysis of Variance of the Categories Undecided
About Heaven and Hell

This analysis was a comparison of the means of the five category groups of vocational education students and teachers who had expressed uncertainty as to the existence of a Heaven and a Hell. Table XII in the Appendix (p. 82) showed the Analysis of Variance and the Newman-Keuls comparison between ordered means for these groups.

The computed results ($F=0.59$; $4/71$; $p \geq 0.67$) verified by the Newman-Keuls test, showed that there was no significant difference between the means of the category groups with the exception of a significant difference between the means of all groups and the mean of Group Five. For the reasons previously stated, Group Five was not considered. When Group Five was not considered, there was no significant increase in intellectualism scores for those vocational education teachers who had expressed an uncertainty as to the existence of a Heaven and a Hell.

Analysis of Variance of the Categories Disbelieving
in Heaven and Hell

This analysis compared the means of the five category groups of vocational education students and teachers who did not express a belief in the existence of a Heaven and a Hell. Table XIII in the Appendix (p. 83) showed the Analysis of variance and the Newman-Keuls test for these groups.

Computed results ($F=2.43$; $4/58$; $p \geq 0.06$) verified by the Newman-Keuls test, indicated that there was only a significant difference between Group Two and Group Five. Upon examining the means of the five category groups, it was noted that all means increased with increased years of teacher education except for the mean of Group Two which decreased. Because the mean of Group Two differed significantly only with the mean of Group Five, no importance was attached to this difference as far as this study was concerned. The number of subjects in Group Five was also considered to be so small that any differences shown would be unreliable. Therefore, there was no significant increase in intellectualism scores for those subjects who did not express a belief in the existence of a Heaven and a Hell.

Table IV below summarized the analysis of variance computed for the groups in each of the categories that comprised the sample.

TABLE IV

SUMMARY OF GROUP ANALYSIS OF VARIANCE

Group	F-Number	Degrees of Freedom	Probability
Non-Technical	F=1.08	4/96	$p \geq 0.37$
Technical	F=1.29	4/162	$p \geq 0.28$
Arts Options	F=0.95	4/131	$p \geq 0.44$
Science Options	F=1.80	4/127	$p \geq 0.13$
Female	F=1.32	3/46	$p \geq 0.28$
Male	F=1.2	4/213	$p \geq 0.31$
Religion A	F=1.68	4/124	$p \geq 0.16$
Religion B	F=0.59	4/71	$p \geq 0.67$
Religion C	F=2.43	4/58	$p \geq 0.06$

The F-tests were not found to be significant at the 0.05 level for any of the nine analysis of variance tests used for Hypothesis V. Nor were any significant differences found between means of the category groups by the Newman-Keuls test of comparison between ordered means. No significant increase in intellectualism was noted for any of the sample groups used in the testing of this hypothesis (see Table II, p. 33).

Discussion of Testing Procedures

The t-test and the analysis of variance assumed that the distribution of the I-P variables in the population from which the samples were drawn were normal and that the populations had equal variances (homogeneity of variance or homoscedasticity).

For large samples, the normality of the population will not seriously affect the estimation of probabilities except perhaps in cases of extreme skewness. For quite small samples, reasonably large departures from normality would not seriously affect the estimation of probabilities for a two-tailed test. In general, the effect of departure from normality would tend to make the results appear more significant than they were.

In this study, the researcher had no reason to suspect any extreme departure of the data from normality. The small sample sizes of some of the groups would make it difficult to demonstrate rigorously lack of normality. Tests of normality and homogeneity of variance were not used because of the lack of sensitivity when applied to small samples (Ferguson, p. 169). One advantage of the analysis of variance was that it was a robust test in that reasonable departures from the assumptions of normality and homogeneity could occur without seriously affecting the validity of the inferences drawn. The researcher felt that his findings were probably representative of a larger, though perhaps ill-defined,

group or population.

Limitations

The Likert-type scale used in this study claimed to be no more than an ordinal scale. Its use made possible the ranking of subjects in terms of the favorableness of their attitudes toward intellectualism; but this scale did not provide any basis for stating the degree to which one subject was above or below another on the I-P Continuum, nor the degree of change following application of the treatment variable. From the point of view of the researcher in regard to the level of measurement he would like the instrument to provide, this was a disadvantage.

A shortcoming of the I-P Questionnaire was in the wording of the items. Some were at a level understandable to university students (e.g., materialistic, humanities), but quite possibly not to the "man in the street." This was an important consideration in this study because the questionnaire was administered to the vocational education student teachers immediately after their entry to the university. They then, by and large, fitted the "man in the street" category. Further insight into this shortcoming would probably be provided by applying the I-P Questionnaire to non-university entering technical personnel. The Questionnaire also contained some words the meaning of which could change with time, (e.g., eggheads) and words the value

of which could change with times (e.g., communism).

In this study, no attempt was made to control variables such as age (approximately 40 years), previous vocational training (technical school, apprenticeship, military), I.Q. level, and socioeconomic background because of practical considerations. For example, no attempt was made to measure or control the effects that formal education had on a subject's score as opposed to the effects of informal education. This type of uncontrolled variable introduced systematic bias into the experiment which had to be tolerated to some extent because the sample selection method was not a random one. It was not possible in this study to measure the degree of this kind of bias.

The division of the sample into appropriate groups for statistical analysis (e.g., students choosing predominantly from the arts options) did not take into account variances in I-P Scores which could arise from the interaction with the other variables (e.g., religiosity, sex).

CHAPTER V

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

I. SUMMARY OF THE STUDY

Introduction and Purpose

This study was an attempt to discover whether personnel recruited from industry to become vocational education teachers, were more pragmatic in outlook before starting teacher-training, than after completing one or more years of teacher-training.

Knowledge of this kind is needed by teacher education institutions as an aid to a better understanding of vocational teacher characteristics which, in turn, could contribute to improved procedures for selecting teacher candidates, and to the improvement of professional courses in curricula.

Chapter II of the study discussed only a few of the numerous studies that have been carried out in connection with such variables as industrial workers, university students, and such variables as religion, authoritarianism, politics, sex, and education. These signify the importance of the problem.

The Data

Two hundred and seventy-six vocational education students and teachers in the Province of Alberta participated and were rated and placed on an intellectualism-pragmatism

continuum. All subjects were sorted into appropriate groups and the means of all groups were determined (Table II, supra. p. 33). A one-way analysis of variance was done on the various groups, and the significance of changed means was ascertained by Newman-Keuls comparison between ordered means and t-test ratios.

II. CONCLUSIONS

This section restates the five hypotheses and discusses the findings in relation to these hypotheses. Hypotheses I, II, and III are discussed separately, but are dealt with concurrently. Hypothesis IV and Hypothesis V are considered separately. T-test ratios for differences between group means for the first three hypotheses are found in Table III, supra. p. 39. The inferences drawn from these findings are contained in the section entitled, "Implications."

Hypotheses I, II, and III

The first three hypotheses predicted that:

- I. Students from non-technical trade specialties would score higher on the I-P Scale than would those students from the technical trade specialties at the beginning of the vocational education program.
- II. Students choosing predominantly from the Arts options would score higher on the I-P Scale than

would those students choosing predominantly from the Science options at the beginning of the vocational education program.

- III. Female students would score higher on the I-P Scale than would male students at the beginning of the vocational education program.

These hypotheses were not supported. No significant difference was found between the means of the groups used in the testing of these hypotheses.

Discussion of Hypothesis I

The results of the testing of this hypothesis would seem to indicate that the attitudes held by vocational education teachers in Alberta with an industrial orientation who have or are attending university, are, in general, much alike. When the I-P Scores of both the white-collar and blue-collar workers are compared with the studies of Yuker and Block, both kinds of personnel appear to show a relatively high degree of pragmatism. The researcher felt that while these pragmatism scores were relatively high, they might appear higher than they actually are because of the traditional attitude toward work discipline held by the sample. Inherent in the work discipline ethos is the feeling that it is important to complete a job with an acceptable standard of performance and within a reasonable period of time. This traditional attitude might be confused somewhat with a pragmatic attitude. While a high pragmatism score might indicate that

the vocational education teachers are more pragmatic; on the other hand, it could also indicate a high degree of traditional values.

Discussion of Hypothesis II

Many teacher educators have indicated that the inclusion of appropriate liberal-arts courses in the teacher education curriculum will lead to a greater intellectualizing of these teachers. The results of this study indicate that there is no significant difference on the I-P Scale between those students who choose predominantly liberal-arts options and those students who choose predominantly science options. It might happen that the older mean age of vocational education students and teachers has caused them to become set in their attitudes and that any choice of curriculum would not significantly "liberalize" them.

As has been previously mentioned, a selection factor was working in that the Department of Industrial and Vocational Education prescribed, in general, the kinds of options that were to be chosen by individuals from the various vocational specialties. In addition, Lehman, Webster, and Jacob (Supra. p. 19) have all advised caution in interpreting this kind of result because there was no evidence that the more pragmatic mind would be science-oriented.

Discussion of Hypothesis III

The findings of this hypothesis did not indicate any

significant difference in intellectualism on the I-P Scale between male and female vocational education students.

As has been discussed previously by Lehman (Supra. p. 22), the more pragmatic female students tend to forego university and go directly into an occupation. It might happen the female sample of this study is composed of the more pragmatic female.

Because of the traditional attitudes exhibited in North America towards the occupations in which female workers engage, most female workers work in non-technical occupations. It became apparent during the analysis of the student sample, that there was a major predominance of females in the non-technical category and a major predominance of males in the technical category with the result that, in the testing of this hypothesis, the researcher was equating the non-technical female with the technical male. The sample was not considered large enough by this researcher to do an a posteriori comparison of the intellectualism scores of technical females and non-technical males. The results of the testing of this hypothesis appear to agree with the findings of Hypothesis I.

Hypothesis IV

This hypothesis predicted that students with the slightest degree of religiosity (Group C) would score higher on the I-P Scale than would those students with a greater

degree of religiosity at the beginning of the vocational education program. This hypothesis was confirmed. A significance level (Table III, p. 39) of 0.05 was attained for those students who stated they do not believe there is a Heaven or a Hell as opposed to those students who profess a belief in the existence of a Heaven and a Hell and those students undecided about the existence of a Heaven and a Hell.

Discussion of Hypothesis IV

This study somewhat parallels the findings of Yuker and Block (Supra. p. 21) in whose studies the I-P Scores of students listing no religious affiliation were more intellectual than those groups listing religious affiliation. Similar correlations were found by Rokeach using a battery of exams on Catholic, Protestant, and students listing no religious affiliation.

The question of religion has been included in this study because Gelbmann (1958, p. 79) summarized the concept of the closed mind by making it into a personality type. He stated that the concept of a closed mind is not tied to any one belief system but pervades all belief systems. This study by asking about Heaven and Hell attempted to learn something about the religious belief system at the personality level. The intellectualism or pragmatism of the religious belief system could be indicative of the total belief systems of an individual.

Hypothesis V

The final hypothesis predicted that there would be a significant increase in the I-P Scores of teachers as they proceeded toward completion of the vocational education program. This hypothesis was not supported.

Discussion of Hypothesis V

The findings of this hypothesis seem to indicate that a university education did not have a liberalizing effect on the subjects in this study. The results are opposite to the findings of a large number of studies that have been done using regular university students. These studies have shown that, in general, the university had the effect of producing more liberal and intellectual attitudes within the students. The researcher reasons that the mean age level of teachers recruited from industry is high enough that they have become "set" in their attitudes, or that the experiences gained within industrial environments have been such that vocational students' attitudes have been conditioned to resist change. It might also indicate that these teachers perceive the university environment only as a preparation for a new vocation and that the values held by vocational students in education, in general, are much like the values held by workers when job training. It could be that habits of work successfully used in industry are being applied to university studies by these people.

Summary

In summary, the findings of this study indicate that:

1. This sample of vocational education students who have recently left industry and who have just begun teacher training have a mean intellectualism score on the I-P Scale of 109.349 and a standard deviation of 15.98. Yuker and Block's sample of 431 freshmen entering university has a mean score of 118.0 and a standard deviation of 13.60 on the I-P Scale. When comparing students majoring in various fields, they find that education majors have a mean intellectualism score of 125.3 and a standard deviation of 18.10. While the findings of present research on vocational education students and those of Yuker and Block are not directly comparable, the researcher feels that the mean intellectualism score of the total student sample in this study is relatively low; therefore, beginning vocational education students appear to have a relatively high degree of pragmatism.

2. When the total student sample is divided into certain selected groups--non-technical, technical, arts options, science options, female, male, and groups professing three degrees of religiosity--we find that the mean intellectualism scores of these groups, with the exception of the religious groups, are not significantly different from the mean intellectualism score of the total student sample. Considering the mean intellectualism scores of the religious groups, the findings of this study indicate that only those

students who profess not to believe in the existence of a Heaven and a Hell have significantly larger intellectualism scores than the mean intellectualism score of the total student sample.

3. When the mean intellectualism scores on the I-P Scale are compared using pairs of the above-mentioned selected groups, this study does not find a significant difference in the mean intellectualism scores between non-technical and technical, between subjects choosing arts options and science options, and between female and male. When the mean intellectualism scores of the groups who profess three degrees of religiosity are tested for differences between every possible combination of means, the group of students that professes not to believe in the existence of a Heaven or a Hell has a significantly higher mean intellectualism score on the I-P Scale than the groups that profess uncertainty as to the existence of a Heaven or a Hell or a belief as to the existence of a Heaven and a Hell.

4. When all students groups and teacher groups were compared in relation to optional courses taken, this study finds that the arts or science courses required of vocational education teachers do not, to any significant degree, change intellectualism scores.

In conclusion, this study finds that vocational educational students who have recently left industry and who have just begun teacher education, are relatively pragmatic.

This study also finds that the "liberalizing" portion of the vocational education teacher-training program at the University of Alberta does not, to any significant degree, increase intellectualism scores for the students or teachers enrolled in this program. It would appear then that graduates of this program are just as pragmatic upon completion of the teacher-training program as are those students who have just left industrial environments to enter the teacher-training program.

III. IMPLICATIONS

Teacher education in the vocational education field has not been the object of many studies. It is hoped that this study will make some small contribution to the task of identifying some of the vocational teacher characteristics and in helping to gain added insight into the contributions made by the "liberalizing" portion to the total teacher education program in vocational education. The findings of this study, while not conclusive, have several important implications for teacher education programs in vocational education.

Perhaps the conclusions have their greatest application for teacher educators who generally subscribe to the concept that university education will provide a liberal-minded vocational education teacher. The apparent pragmatic "set" in attitude, as found in this study, may indicate that

selection of university courses may not be the complete answer to the problem of liberalizing people from industry. The university courses that vocational education student teachers take are those required of all student teachers who are enrolled for secondary school teaching. In addition, they take one teaching methods course, plus two courses in the philosophy of vocational education. An important factor may be the interrelating of these people with students in other departments or faculties of the university in order that they have contact with more liberal peers. Perhaps longer and continuous on-campus attendance can do more to liberalize industrially-oriented personnel than can specific university courses. It might happen that liberalization can not occur until after the third or fourth year of teacher training. Through interrelationships at a more abstract level over a longer period of time, the vocational education student teacher may overcome, to some extent, his limitations imposed by too great an involvement with sense experience.

The above implications may be of some value to the new Route Two Program initiated recently by the Department of Industrial and Vocational Education at the University of Alberta. Route Two is an alternate program for the preparation of vocational education teachers. Route Two offers a five-year degree program in vocational education to high school graduates who can combine academic preparation with supervised work experience. This new approach might provide

the liberalizing effect that appears to be lacking in the present program. The lower average age level and lack of pragmatic job "set" can quite conceivably produce the more abstract, non-traditional outlook necessary to teachers in preparing today's pupils for life in productive society.

IV. RECOMMENDATIONS

This study has pointed out some of the characteristics and attitudes of vocational education teachers. A comparison of the sample and subsamples showed that vocational education students and teachers were much the same and that university courses they were required to take did not have a liberalizing effect upon their intellectualism score.

The conclusions reveal the several possibilities for research.

1. The present study has sampled vocational education teachers in the Province of Alberta. A similar study to this one could be carried out in other Departments of the Faculty of Education to determine how students and teachers enrolled in these departments compare to students and teachers in the Department of Industrial and Vocational Education.

2. It is felt by the researcher that too "gross" a division of the student sample has been made in this study. The researcher recommends that it would be beneficial to use smaller divisions (e.g., division of the technical group into the various occupations that form this group). It

would also prove worthwhile to determine what variances in I-P Scores arise because of interaction between the groups within the sample (e.g., What differences are there between male technical workers who take predominantly arts options and male technical workers who take predominantly science options?).

3. If the I-P Scale could be refined to measure intellectualism and pragmatism with finer distinctions, additional studies could be done in teacher education and more specifically in vocational teacher education. For example, what spheres of university study foster liberalism and intellectualism? Differences between rural and urban vocational education teachers could also be investigated.

4. Research relating to the development of new instruments to evaluate vocational education teachers are needed. New statistical techniques such as the Q-sort technique which is being used in various branches of the social sciences might prove useful. Q-technique permits appraisal of the beliefs, attitudes, values, and self-concepts of individual subjects in a way not provided for by conventional psychological tests and inventories.

5. A study relating the effects that informal education and extra-vocational activities have on a subject's score as opposed to effects resulting from formal education is needed.

6. Research must help overcome the problem of

separatism in the teaching specialties of vocational education teachers. Ways need to be found that will help these teachers to see their field of specialization as a part of the entire educational program if they are to help students find connections, integrate perceptions, and dig out meanings.

7. It is recommended that a longitudinal study of the Route Two Vocational Education Program at the University of Alberta be undertaken as soon as possible. Comparison of the two methods used in the training of vocational education students at this university might help to improve both programs.

In conclusion, this study bears evidence of the challenge which still lies ahead in the study of intellectualism and the vocational education teacher. There are as yet many unexplored facets in this area, a better understanding of which would provide important foundations for the improvement of vocational education theory and practice.

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APPENDIX

Department of Industrial and
Vocational Education
University of Alberta
Edmonton, Alberta, Canada

February, 1967

Dear Colleague:

The enclosed questionnaire is part of a Graduate research study designed to show some of the attitudes of vocational education teachers.

It is not intended to measure the attitude of any one teacher but to provide some statistics that will allow us to see which opinions are held by the majority of teachers.

If we are able to obtain a large enough sample of teacher's opinions, it may help us to devise some better method of selection of university students for the vocational education program.

Your co-operation in completing the questionnaire would be of great help to us and most sincerely appreciated. You will note that you need not put your name or any other identifying symbol on these forms so you may feel free to answer the questions in accordance with your honest opinions. The questionnaire is entirely anonymous.

The instructions are on the form and a stamped self-addressed envelope is enclosed for your convenience.

Very truly yours,

George R. Rose

GRR/vy

Encl:

TEACHER QUESTIONNAIRE

Would you please complete the following questions and enclose this form with your completed Intellectualism-Pragmatism Questionnaire.

1. Number of years of teacher training (encircle) 1 2 3 4 5.
2. Number of years of work experience. _____
3. What is your trade qualification? _____
4. Check the statement that best describes your position:

(a) I believe there is a Heaven and Hell.	_____
(b) I believe there might be a Heaven and Hell.	_____
(c) I do not believe there is a Heaven and Hell.	_____
5. Which of the following two categories best describes the nature of your Arts and Science options (encircle the most appropriate).

Physical Science.	Arts
-------------------	------
6. Sex: M _____ F _____

INTELLECTUALISM-PRAGMATISM QUESTIONNAIRE

Indicate your extent of agreement or disagreement with the following items by assigning a score for each item RANGING from plus 3 to minus 3. Depending on the extent of your agreement, you will assign either plus 1 (least) plus 2 or plus 3 (most). Depending on the extent of your disagreement you will assign either minus 1 (least) minus 2 or minus 3 (most). Assign a score for all items.

- _____ 1. The primary purpose of higher education should be individual growth and development.
- _____ 2. Americans are too materialistic.
- _____ 3. It is important for Americans to understand communism.
- * _____ 4. Intellectuals should try to be more like normal folks.
- * _____ 5. Most deep thinkers are too liberal.
- * _____ 6. Too many gifted people have communistic tendencies.
- _____ 7. Eggheads get along well with other people.
- * _____ 8. Ideas are all right, but its getting the job done that counts.
- * _____ 9. Too many new ideas come from radicals and trouble makers.
- * _____ 10. Colleges and schools should spend more time getting students ready for jobs and less time filling them with useless information.
- * _____ 11. People with new ideas are usually radicals who are trying to cause trouble.
- * _____ 12. The greatest contributions to civilization have been made by practical men.

- _____ 13. Too few college students are intellectually inclined.
- _____ 14. Philosophy is a very valuable study.
- * _____ 15. Nations are built by hard work, not abstract ideas.
- _____ 16. Eggheads should be given more say in politics and government.
- _____ 17. People should study many religions before making a choice.
- _____ 18. Poetry and art have made many real contributions to civilization.
- * _____ 19. Bookworms are usually dull people.
- * _____ 20. Being a philosophy major tends to separate one from reality.
- * _____ 21. If high-brow thinkers would leave well enough alone, we would all be better off.
- _____ 22. Thinkers are more important today than doers.
- _____ 23. In today's society we need thinkers more than trained personnel.
- _____ 24. If I were going to see a play, I would prefer a serious drama to a musical or light comedy.
- _____ 25. A person who goes to a concert is enriching his life.
- * _____ 26. Music and art courses are usually a waste of time.
- * _____ 27. Most eggheads are snobs.
- _____ 28. Colleges should concentrate more on the humanities and less on specialization.
- _____ 29. If I had money, I would rather take a trip to Europe than buy a car.
- * _____ 30. Artists should go back to painting things as they really are.

TABLE V

ANALYSIS OF VARIANCE OF MEAN INTELLECTUALISM SCORES AND
NEWMAN-KEULS COMPARISON BETWEEN ORDERED MEANS FOR FIVE
GROUPS OF NON-TECHNICAL VOCATIONAL EDUCATION TEACHERS

Means For Groups			Number		
1	Students	109.843		51.	
2	Completed 2nd Year	114.389		18.	
3	Completed 3rd Year	112.857		14.	
4	Completed 4th Year	114.909		11.	
5	Previous Degree	124.143		7.	
Grand Mean=		112.614	N= 101		
Sum Of Squares			Variances Of Groups		
1	Students	0.62801000E 06		253.375	
2	Completed 2nd Year	0.24380500E 06		486.958	
3	Completed 3rd Year	0.18286800E 06		350.286	
4	Completed 4th Year	0.14997400E 06		472.891	
5	Previous Degree	0.10948700E 06		267.810	
Analysis Of Variance					
Source	SS	MS	DF	F	P
Groups	0.14374219E 04	359.36	4.	1.08	0.37
Error	0.31836531E 05	331.63	96.		
Newman-Keuls					
	5	4	2	3	1
Means	124.143	114.909	114.389	112.857	109.843
1	109.843	14.300	5.066	4.546	3.014
3	112.857	11.286	2.052	1.532	0.000
2	114.389	9.754	0.520	0.000	
4	114.909	9.234	0.000		
5	124.143	0.000			
R-	5	4	3	2	

The Multiplier Is 5.02272

TABLE VI

ANALYSIS OF VARIANCE OF MEAN INTELLECTUALISM SCORES AND
NEWMAN-KEULS COMPARISON BETWEEN ORDERED MEANS FOR FIVE
GROUPS OF TECHNICAL VOCATIONAL EDUCATION TEACHERS

Means For Groups			Number		
1	Students	108.914		58.	
2	Completed 2nd Year	108.167		30.	
3	Completed 3rd Year	111.044		45.	
4	Completed 4th Year	114.885		26.	
5	Previous Degree	119.000		8.	
Grand Mean=		110.766	N= 167.		
Sum Of Squares			Variances Of Groups		
1	Students	0.70290500E 06		261.343	
2	Completed 2nd Year	0.35644100E 06		187.592	
3	Completed 3rd Year	0.56727500E 06		281.498	
4	Completed 4th Year	0.35115700E 06		319.866	
5	Previous Degree	0.11621400E 06		418.000	
Analysis Of Variance					
Source	SS	MS	DF	F	P
Groups	0.13885937E 04	347.15	4.	1.29	0.28
Error	0.43645313E 05	269.42	162.		
Newman-Keuls					
	5	4	3	1	2
Means	119.000	114.885	111.044	108.914	108.167
2	108.167	10.833	6.718	2.878	0.747
1	108.914	10.086	5.971	2.131	0.000
3	111.044	7.956	3.840	0.000	
4	114.885	4.115	0.000		
5	119.000	0.000			
R-	5	4	3	2	

The Multiplier Is 3.56796

TABLE VII

ANALYSIS OF VARIANCE OF MEAN INTELLECTUALISM SCORES AND
NEWMAN-KEULS COMPARISON BETWEEN ORDERED MEANS FOR FIVE
GROUPS OF TEACHERS WHO CHOSE PREDOMINANTLY ARTS OPTIONS

Means For Groups			Number		
1	Students	111.532		47.	
2	Completed 2nd Year	116.308		26.	
3	Completed 3rd Year	113.235		34.	
4	Completed 4th Year	118.048		21.	
5	Previous Degree	121.250		8.	
Grand Mean=		114.449	N= 136.		
Sum Of Squares			Variances Of Groups		
1	Students	0.59922200E 06		316.776	
2	Completed 2nd Year	0.36083600E 06		364.862	
3	Completed 3rd Year	0.44517800E 06		279.458	
4	Completed 4th Year	0.29948100E 06		342.048	
5	Previous Degree	0.11843400E 06		117.357	
Analysis Of Variance					
Source	SS	MS	DF	F	P
Groups	0.11818281E 04	295.46	4.	0.95	0.44
Error	0.40577828E 05	309.75	131.		
Newman-Keuls					
	5	4	2	3	1
Means	121.250	118.048	116.308	113.235	111.532
1	111.532	9.718	6.516	4.776	1.703
3	113.235	8.015	4.812	3.072	0.000
2	116.308	4.942	1.740	0.000	
4	118.048	3.202	0.000		
5	121.250	0.000			
R-	5	4	3	2	

The Multiplier Is 4.02701

TABLE VIII

ANALYSIS OF VARIANCE OF MEAN INTELLECTUALISM SCORES AND
NEWMAN-KEULS COMPARISON BETWEEN ORDERED MEANS FOR FIVE
GROUPS OF TEACHERS WHO CHOSE PREDOMINANTLY SCIENCE OPTIONS

Means For Groups			Number		
1	Students	107.694	62.		
2	Completed 2nd Year	103.636	22.		
3	Completed 3rd Year	109.080	25.		
4	Completed 4th Year	110.750	16.		
5	Previous Degree	121.571	7.		
Grand Mean=		108.386	N= 132.		
Sum Of Squares			Variances Of Groups		
1	Students	0.73169300E 06	206.937		
2	Completed 2nd Year	0.23941000E 06	148.528		
3	Completed 3rd Year	0.30496500E 06	312.660		
4	Completed 4th Year	0.20166500E 06	360.067		
5	Previous Degree	0.10726700E 06	634.952		
Analysis Of Variance					
Source	SS	MS	DF	F	P
Groups	0.18444687E 04	461.12	4.	1.80	0.13
Error	0.32456844E 05	255.57	127.		
Newman-Keuls					
	5	4	3	1	2
Means	121.571	110.750	109.080	107.694	103.636
2	103.636	17.935	7.114	5.444	4.057
1	107.694	13.873	3.056	1.386	0.000
3	109.080	12.491	1.670	0.000	
4	110.750	10.821	0.000		
5	121.571	0.000			
R-	5	4	3	2	

The Multiplier Is 3.96090

TABLE IX

ANALYSIS OF VARIANCE OF MEAN INTELLECTUALISM SCORES AND
NEWMAN-KEULS COMPARISON BETWEEN ORDERED MEANS FOR FOUR
GROUPS OF FEMALE VOCATIONAL EDUCATION TEACHERS

Means For Groups			Number		
1	Students	107.192		26.	
2	Completed 2nd Year	110.583		12.	
3	Completed 3rd Year	114.714		7.	
4	Completed 4th Year	123.600		5.	
Grand Mean=		110.700	N= 50.		
Sum Of Squares			Variances Of Groups		
1	Students	0.30491100E 06		246.642	
2	Completed 2nd Year	0.15132900E 06		416.811	
3	Completed 3rd Year	0.92969000E 05		142.238	
4	Completed 4th Year	0.79424000E 05		759.800	
Analysis Of Variance					
Source	SS	MS	DF	F	P
Groups	0.12649062E 04	421.64	3.	1.32	0.28
Error	0.14643594E 05	318.34	46.		
Newman-Keuls					
	4	3	2	1	
Means	123.600	114.714	110.583	107.192	
1	107.192	16.408	7.522	3.391	0.000
2	110.583	13.017	4.131	0.000	
3	114.714	8.886	0.000		
4	123.600	0.000			
R-	4	3	2		

The Multiplier Is 6.08105

TABLE X

ANALYSIS OF VARIANCE OF MEAN INTELLECTUALISM SCORES AND
NEWMAN-KEULS COMPARISON BETWEEN ORDERED MEANS FOR FIVE
GROUPS OF MALE VOCATIONAL EDUCATION TEACHERS

Means For Groups			Number		
1	Students	110.024		83.	
2	Completed 2nd Year	110.472		36.	
3	Completed 3rd Year	111.038		52.	
4	Completed 4th Year	114.727		33.	
5	Previous Degree	119.143		14.	
Grand Mean=		111.638	N= 218.		
Sum Of Squares			Variances Of Groups		
1	Students	0.10260040E 07		259.316	
2	Completed 2nd Year	0.44891700E 06		273.399	
3	Completed 3rd Year	0.65717400E 06		314.469	
4	Completed 4th Year	0.44511600E 06		336.205	
5	Previous degree	0.20229200E 06		273.978	
Analysis Of Variance					
Source	SS	MS	DF	F	P
Groups	0.13872500E 04	346.81	4.	1.21	0.31
Error	0.61191157E 05	287.28	213.		
Newman-Keuls					
	5	4	3	2	1
Means	119.143	114.727	111.038	110.472	110.024
1	110.024	9.119	4.703	1.014	0.448
2	110.472	8.671	4.255	0.566	0.000
3	111.038	8.104	3.689	0.000	
4	114.727	4.416	0.000		
5	119.143	0.000			
R-	5	4	3	2	

The Multiplier Is 3.03946

TABLE XI

ANALYSIS OF VARIANCE OF MEAN INTELLECTUALISM SCORES AND
NEWMAN-KEULS COMPARISON BETWEEN ORDERED MEANS FOR FIVE
GROUPS OF TEACHERS PROFESSING BELIEF IN HEAVEN AND HELL

Means For Groups			Number		
1	Students	107.655		58.	
2	Completed 2nd Year	109.417		24.	
3	Completed 3rd Year	108.091		22.	
4	Completed 4th Year	112.350		20.	
5	Previous Degree	126.400		5.	
Grand Mean=		109.512	N= 129.		
Sum Of Squares			Variances Of Groups		
1	Students	0.68595800E 06		241.388	
2	Completed 2nd Year	0.29620000E 06		385.732	
3	Completed 3rd Year	0.26256600E 06		263.134	
4	Completed 4th Year	0.25774500E 06		278.661	
5	Previous Degree	0.80254000E 05		92.300	
Analysis Of Variance					
Source	SS	MS	DF	F	P
Groups	0.18317187E 04	457.93	4.	1.68	0.16
Error	0.33820532E 05	272.75	124.		
Newman-Keuls					
	5	4	2	3	1
Means	126.400	112.350	109.417	108.091	107.655
1 107.655	18.745	4.695	1.761	0.436	0.000
3 108.091	18.309	4.259	1.326	0.000	
2 109.417	16.983	2.933	0.000		
4 112.350	14.050	0.000			
5 126.400	0.000				
R-	5	4	3	2	

The Multiplier Is 4.39661

TABLE XII

ANALYSIS OF VARIANCE OF MEAN INTELLECTUALISM SCORES AND
NEWMAN-KEULS COMPARISON BETWEEN ORDERED MEANS FOR FIVE
GROUPS OF TEACHERS UNCERTAIN ABOUT HEAVEN AND HELL

Means For Groups			Number		
1	Students	106.667		27.	
2	Completed 2nd Year	115.071		14.	
3	Completed 3rd Year	111.000		19.	
4	Completed 4th Year	111.400		10.	
5	Previous Degree	110.167		6.	
Grand Mean=		110.197	N= 76.		
Sum Of Squares			Variances Of Groups		
1	Students	0.31390800E 06		258.000	
2	Completed 2nd Year	0.18885900E 06		267.610	
3	Completed 3rd Year	0.23962700E 06		307.111	
4	Completed 4th Year	0.12737400E 06		363.822	
5	Previous Degree	0.74645000E 05		364.967	
Analysis Of Variance					
Source	SS	MS	DF	F	P
Groups	0.69587500E 03	173.97	4.	0.59	0.67
Error	0.20814172E 05	293.16	71.		
Newman-Keuls					
	2	4	3	5	1
Means	115.071	111.400	111.000	110.167	106.667
1 106.667	8.405	4.733	4.333	3.500	0.000
5 110.167	4.905	1.233	0.833	0.000	
3 111.000	4.071	0.400	0.000		
4 111.400	3.671	0.000			
2 115.071	0.000				
R-	5	4	3	2	

The Multiplier Is 5.00804

TABLE XIII

ANALYSIS OF VARIANCE OF MEAN INTELLECTUALISM SCORES AND
NEWMAN-KEULS COMPARISON BETWEEN ORDERED MEANS FOR FIVE
GROUPS OF TEACHERS UNBELIEVING IN HEAVEN AND HELL

Means For Groups			Number
1	Students	116.458	24.
2	Completed 2nd Year	106.700	10.
3	Completed 3rd Year	116.111	18.
4	Completed 4th Year	127.143	7.
5	Previous Degree	132.000	4.
Grand Mean=		116.984	N= 63.

Sum Of Squares			Variances Of Groups
1	Students	0.33104900E 06	241.216
2	Completed 2nd Year	0.11518700E 06	148.678
3	Completed 3rd Year	0.24795000E 06	310.458
4	Completed 4th Year	0.11601200E 06	475.810
5	Previous Degree	0.70802000E 05	368.667

Analysis Of Variance

Source	SS	MS	DF	F	P
Groups	0.27022813E 04	675.57	4.	2.43	0.06
Error	0.16124703E 05	278.01	58.		

Newman-Keuls

	5	4	1	3	2
Means	132.000	127.143	116.458	116.111	106.700
2	106.700	25.300	20.443	9.758	9.411
3	116.111	15.889	11.032	0.347	0.000
1	116.458	15.542	10.685	0.000	
4	127.143	4.857	0.000		
5	132.000	0.000			
R-	5	4	3	2	

The Multiplier Is 5.72799

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